

# STATION NOTE

CENTRAL STATES FOREST EXPERIMENT STATION  
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U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

## METHOXYCHLOR: SAFE AND EFFECTIVE SUBSTITUTE FOR DDT IN CONTROLLING DUTCH ELM DISEASE

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Dutch elm disease is one of the most devastating pests of shade trees in the United States. The only known method of reducing losses from this disease is by spraying healthy elms to prevent feeding by the bark beetle carrier and destroying the breeding sources of this insect.

Many cities have been following the current recommendations for protecting their elms as outlined in Agriculture Information Bulletin No. 193 published by the U.S. Department of Agriculture. This method, involving the use of DDT, has been successful in holding the losses from this disease to 1 percent or less where the spray was properly formulated and timed and adequately applied. But because DDT is somewhat toxic to birds and other wildlife, a less harmful insecticide is desired.

Among the many materials that have been evaluated for control of the Dutch elm disease, methoxychlor compared favorably with DDT in effectiveness and residual qualities and is one of the least toxic insecticides to birds and mammals. This material has two disadvantages.

One that showed up when the original studies were made 10 years ago was that it was injurious to leaf buds when applied at about the time buds were opening. (No injury occurred when the trees were dormant.) Since then, however, it is claimed that the formula has been changed to make the material less toxic to plants. The other disadvantage of methoxychlor is its cost: generally it is more expensive than DDT (2 to 4 times as much). Both these disadvantages can be at least partially counteracted by applying the spray during the dormant season and by using minimum concentrations of the active ingredients.

Studies conducted in cooperation with the Parks Department in Columbus, Ohio and with the National Capital Parks Service in Washington, D. C. show that 3, 6, 9, and 12 percent concentrations of methoxychlor were as effective as similar concentrations of DDT. The three higher concentrations of methoxychlor gave 98 percent control or better up to the time the studies were concluded (90 days in Washington, 150 days in Ohio). The 3 percent methoxychlor gave

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94 percent control or better up to the time the work was concluded, while DDT gave 92 percent control at the end of 150 days. There is no reason to believe that such sprays would not last as long as 250 days as have hydraulically applied sprays in other studies.

The sprays were applied as emulsions with a high velocity mist blower at the rate of 1 to 3 gallons of spray per tree depending upon the tree size (25 to 50 feet high). All treatments were made in April before the leaves had emerged.

On the basis of this and other research it is safe to conclude that when coverage is comparable, methoxychlor is fully as effective as that of DDT. This means that spraying may be done at any time during the dormant season. Methoxychlor emulsified spray is especially recommended as a substitute for DDT for control of Dutch elm disease in areas where bird and other wildlife mortality is an obstacle to the use of DDT.

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